



PATENT  
Docket No. 275.00030102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Li et al.	)	Group Art Unit:	1635
		)		
Serial No.:	10/038,984	)	Examiner:	Unknown
Confirmation No.:	9705	)		
		)		
Filed:	January 4, 2002	)		
		)		
For:	COMPOSITION AND METHOD FOR IN VIVO AND IN VITRO ATTENUATION GENE EXPRESSION USING DOUBLE STRANDED RNA			

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INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
P.O. Box 2327  
Arlington, VA 22202

Sir:

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with C.F.R. §§ 1.97 *et. seq.*, the materials enclosed herewith are brought to the attention of the Examiner as possibly being of interest in connection with the above-identified patent application. Consideration of each of the documents listed on the attached 1449 forms is respectfully requested. Pursuant to the provisions of M.P.E.P. § 609, Applicants further request that a copy of the 1449 forms, marked as being considered and initialed by the Examiner, be returned with the next Official Communication.

Applicants also wish to bring the Examiner's attention to the following pending U.S. Applications, as well as any prior art and any provisional U.S. patent applications referenced therein. A copy of each of the below-listed pending U.S. Patent Applications is provided herewith.

**Information Disclosure Statement**

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Applicants: Li et al.

Serial No.: 10/038,984

Confirmation No.: 9705

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For: COMPOSITION AND METHOD FOR IN VIVO AND IN VITRO ATTENUATION OF GENE  
EXPRESSION USING DOUBLE STRANDED RNA

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**List of Pending Non-Published U.S. Patent Applications**

Applicants	Application Number	Filing Date	Serial No. of Provisional Application to which listed Application claims priority
Li et al.	09/493,301	01/28/00	60/117,635 60/175,440

This application is a continuation of U.S. Patent Application Serial No. 09/493,301 filed January 28, 2000. In accordance with 37 C.F.R. § 1.98(d), copies of documents previously cited by or submitted to the U.S. Patent and Trademark Office in connection with Applicants' prior application(s) listed above, are not included herewith.

It is believed that no fee is due, as this Information Disclosure Statement is filed prior to the receipt of any Action on the merits. However, in the event a fee is due, please charge any fee or credit any overpayment to Account No. 13-4895.

**Information Disclosure Statement**

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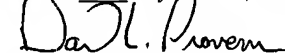
For: COMPOSITION AND METHOD FOR IN VIVO AND IN VITRO ATTENUATION OF GENE  
EXPRESSION USING DOUBLE STRANDED RNA

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The Examiner is invited to contact Applicants' Representatives at the below-listed telephone number, if they can be of any assistance during prosecution of the present application.

**CERTIFICATE UNDER 37 C.F.R. 1.8:**

The undersigned hereby certifies that this paper is being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Assistant Commissioner for Patents, P.O. Box 2327, Arlington, VA 22202, on this 25 day of June, 2002.



David L. Provence

Date June 25, 2002

Respectfully submitted for

**Li et al.**

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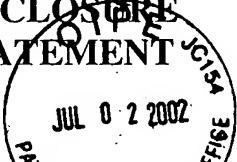
<b>INFORMATION DISCLOSURE STATEMENT</b>		Atty. Docket No.: 275.0003 0102		Serial No.: 10/038,984			
				Confirmation No. 9705			
		Applicant(s): Yin-Xiong Li et al.					
		Filing Date: January 4, 2002		Group: 1635			
<b>U.S. PATENT DOCUMENTS</b>							
Examiner Initial	Document Number	Date	Name	Class	Filing Date If Appropriate		
	5, 422,241	06/06/95	Goldrick et al.				
<b>FOREIGN PATENT DOCUMENTS</b>							
	Document Number	Date	Country	Class	SubClass	Translation	
						Yes	No
	WO 99/32619	07/01/99	PCT				
	WO 99/38537	08/05/99	PCT				
	WO 99/61631	12/02/99	PCT				
<b>OTHER DOCUMENTS (Including Authors, Title, Date, Pertinent Papers, etc.)</b>							
	Alvarado et al., "Double-stranded RNA specifically disrupts gene expression during planarian regeneration," <i>Proc. Natl. Acad., Sci. USA</i> , 1999; 96:5049-5054.						
	Amirthalingam et al., "Embryonic expression and DNA-binding properties of zebrafish pax-6," <i>Biochem Biophys Res Commun.</i> , 1995; Oct 4; 215(1):122-8.						
	Barstead, "Genome-wide RNAi," <i>Curr Opin Chem Biol.</i> , 2001 Feb; 5(1):63-6.						
	Baulcombe, "RNA silencing. Diced defence," <i>Nature</i> , 2001 Jan 18; 409(6818): 295-6.						
	Bernstein et al., "Role for a bidentate ribonuclease in the initiation step of RNA interference," <i>Nature</i> , 2001 Jan 18; 409(6818):363-6.						
	Bosher et al., "RNA interference: genetic wand and genetic watchdog," <i>Nature Cell Biol.</i> , 2000 Feb; 2(2):E31-E36.						
	Caplen et al., "Specific inhibition of gene expression by small double-stranded RNAs in invertebrate and vertebrate systems," <i>Proc Natl Acad Sci U S A</i> , 2001 Aug 14; 98(17):9742-7.						
	Caplen et al., "dsRNA-mediated gene silencing in cultured <i>Drosophila</i> cells: a tissue culture model for the analysis of RNA interference," <i>Gene</i> , 2000; 252:95-105.						
	Carthew, "Gene silencing by double-stranded RNA," <i>Curr Opin Cell Biol.</i> , 2001 Apr; 13(2):244-8.						
	Depraetere, "Biotechnology: If in doubt, interfere," [online]. <i>Nature News Service: science update</i> , 2000-01-04. Retrieved from the Internet: <URL:helix.nature.com/nsu/000106/000106-5.html> 2 pgs.						

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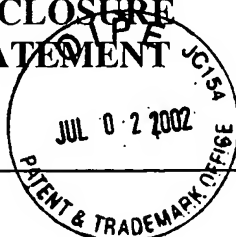
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		Confirmation No. 9705
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	Fire et al., "Potent and specific genetic interference by double-stranded RNA in <i>Caenorhabditis elegans</i> ," <i>Nature</i> , 1998; 391:806-811.
	Fire, "RNA-triggered gene silencing," <i>Trends Genet.</i> , 1999; 15(9):358-363.
	Grishok et al, "Genetic Requirements for Inheritance of RNAi in <i>C. elegans</i> ," <i>Science</i> , 2000 Mar. 31; 287(5462):2494-2497.
	Guo et al., "par-1, a Gene Required for Establishing Polarity in <i>C. elegans</i> Embryos, Encodes a Putative Ser/Thr Kinase That Is Asymmetrically Distributed," <i>Cell</i> , 1995 May 19; 81:611-620.
	Halpern et al., "Induction of Muscle Pioneers and Floor Plate Is Distinguished by the Zebrafish <i>no tail</i> Mutation," <i>Cell</i> , 1993; 75:99-111.
	Halpern et al. "Genetic Interactions in Zebrafish Midline Development," <i>Dev. Biol.</i> , 1997; 187:154-170.
	Hammond et al., "Post-transcriptional gene silencing by double-stranded RNA," <i>Nat Rev Genet</i> , 2001 Feb; 2(2):110-9.
	Herrmann et al., "Cloning of the <i>T</i> gene required in mesoderm formation in the mouse," <i>Nature</i> , 343:617-622 (1990).
	Iordanov et al., "Activation of NF- $\kappa$ B by double-stranded RNA (dsRNA) in the absence of protein kinase R and RNase L demonstrates the existence of two separate dsRNA-triggered antiviral programs," <i>Mol Cell Biol.</i> , 2001 Jan; 21(1):61-72.
	Kaufman, "Double-stranded RNA-activated protein kinase mediates virus-induced apoptosis: a new role for an old actor," <i>Proc Natl Acad Sci U S A.</i> , 1999 Oct 12; 96(21):11693-5.
	Kennerdell et al., "Use of dsRNA-Mediated Genetic Interference to Demonstrate that <i>frizzled</i> and <i>frizzled 2</i> Act in the Wingless Pathway," <i>Cell</i> , 1998; 95:1017-1026.
	King et al., "STAT1 is inactivated by a caspase," <i>J Biol Chem.</i> , 1998 Apr 10; 273(15):8699-704.
	Kumar et al., "Antisense RNA: Function and Fate of Duplex RNA in Cells of Higher Eukaryotes," <i>Microbiol. Mol. Biol. Rev.</i> , 1998; 62(4):1415-1434.
	Lau et al., "Embryonic XMap2112 expression is required for gastrulation and subsequent neural development," <i>Biochem Biophys Res Commun.</i> , 2001 Feb 9; 280(5):1378-84.

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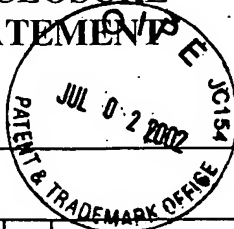
TECH CENTER 1600/2900

JUL 0 9 2002

RECEIVED

	Lee et al., "A Molecular Titration Assay to Measure Transcript Prevalence Levels," <i>Methods in Enzymology</i> , 1987; 152:633 & 643.
	Li et al., "Double-Stranded RNA Injection Produces Null Phenotypes in Zebrafish," <i>Dev. Biol.</i> , 217(2):394-405 (available in print January 15, 2000; published electronically January 11, 2000).
	Li et al., "Erratum" of <i>Dev Biol</i> 2000 Jan 15;217(2):394-405, appears in <i>Dev. Biol.</i> , 2000 April 15; 220(2):432.
	Li et al., "Induction of necrotic-like cell death by tumor necrosis factor alpha and caspase inhibitors: novel mechanism for killing virus-infected cells," <i>J. Virol.</i> , 2000 August; 74(16):7470-7.
	Li et al., "The RelA(p65) subunit of NF- $\kappa$ B is essential for inhibiting double-stranded RNA-induced cytotoxicity," <i>J. Biol Chem.</i> , 2001 Jan 12; 276(2):1185-94.
	Liebhauer et al., "Translation inhibition by an mRNA coding region secondary structure is determined by its proximity to the AUG initiation codon," <i>J. Mol Biol.</i> , 1992 Aug 5; 226(3):609-21.
	Melby et al., "Spatial Regulation of <i>floating head</i> Expression in the Developing Notochord," <i>Dev. Dyn.</i> , 1997; 209(2):156-165.
	Montgomery et al., "RNA as a target of double-stranded RNA-mediated genetic interference in <i>Caenorhabditis elegans</i> ," <i>Proc. Natl. Acad. Sci. USA</i> , 95:15502-15507 (1998).
	Montgomery et al., "Double-stranded RNA as a mediator in sequence-specific genetic silencing and co-suppression," <i>Trends Genet.</i> , 1998; 14(7):255-258.
	Ngô et al., "Double-stranded RNA induces mRNA degradation in <i>Trypanosoma brucei</i> ," <i>Proc. Natl. Acad. Sci. USA</i> , 1998; 95(25):14687-14692.
	Nishikawa et al., "Targeted disruption of a pupal hemocyte protein of <i>Sarcophaga</i> by RNA interference," <i>Eur J Biochem.</i> , 2001 Oct; 268(20):5295-9.
	Nüsslein-Volhard, "Of Flies and Fishes," <i>Science</i> , 1994; 266(5185):572-574.
	Oates et al., "Too much interference: injection of double-stranded RNA has nonspecific effects in the zebrafish embryo," <i>Dev. Biol.</i> , 2000 Aug 1; 224(1):20-8.
	Pelletier et al., "Photochemical cross-linking of cap binding proteins to eucaryotic mRNAs: effect of mRNA 5' secondary structure," <i>Mol Cell Biol.</i> , 1985 Nov; 5(11):3222-30.
	Rocheleau et al., "Wnt Signaling and an APC-Related Gene Specify Endoderm in Early <i>C. elegans</i> Embryos," <i>Cell</i> , 1997; 90:707-716.
	Russell et al., "Double-stranded RNA triggers generalized translational arrest in <i>Xenopus</i> oocytes," <i>Biochem. Biophys. Res. Comm.</i> , 1993; 194(2):892-900.

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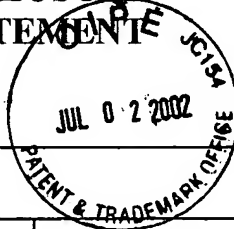
TECH CENTER 1600/2900

JUL 09 2002

	Schulte-Merker et al., "The protein product of the zebrafish homologue of the mouse <i>T</i> gene is expressed in nuclei of the germ ring and the notochord of the early embryo," <i>Development</i> , 1992 Dec; 116(4):1021-32.
	Schulte-Merker et al., " <i>no tail (ntl)</i> is the zebrafish homologue of the mouse <i>T</i> ( <i>Brachyury</i> ) gene," <i>Development</i> , 1994 Apr; 120(4):1009-15.
	Sharp et al., "RNA Interference," <i>Science</i> , 2000 Mar. 31; 287(5462):2431-2433.
	Smalheiser, et al., "RNAi and brain function: was McConnell on the right track?" <i>Trends Neurosci.</i> , 2001 Apr; 24(4):216-8.
	Smyth, "Gene silencing: Cosuppression at a distance," <i>Curr. Biol.</i> , 1997; 7(12):R793-795.
	Svoboda et al., "Selective reduction of dormant maternal mRNAs in mouse oocytes by RNA interference," <i>Development</i> , 2000; 127:4147-4155.
	Tabara et al., "RNAi in <i>C. elegans</i> : Soaking in the Genome Sequence," <i>Science</i> , 1998; 282(5388):430-431.
	Timmons et al., "Specific interference by ingested dsRNA," <i>Nature</i> , 1998 Oct.; 395(6705):854.
	Vacca, <i>Laboratory Manual of Histochemistry</i> , Raven Press, New York, 1985, Title page, publication page, table of contents, and pgs. 352-354.
	Wargelius et al., "Double-Stranded RNA Induces Specific Developmental Defects in Zebrafish Embryos," <i>Biochem. Biophys. Res. Comm.</i> , 1999; 263(2):156-161.
	Wassenegger et al., "A model for RNA-mediated gene silencing in higher plants," <i>Plant Mol. Biol.</i> , 1998; 37(2):349-362.
	Waterhouse et al., "Virus resistance and gene silencing in plants can be induced by simultaneous expression of sense and antisense RNA," <i>Proc. Natl. Acad. Sci. USA</i> , 1998; 95(23):13959-13964.
	Weaver et al., "Apoptosis is promoted by the dsRNA-activated factor (DRAF1) during viral infection independent of the action of interferon or p53," <i>FASEB J.</i> 2001 Feb; 15(2):501-15.
	Westerfield, <i>The Zebrafish Book. A guide for the laboratory use of zebrafish (Danio rerio) 3<sup>rd</sup> edition</i> , [online]. 1993, University of Oregon Press, Eugene, OR. Retrieved from the Internet: <URL:zfsh.uoregon.edu/zf%5Finfo/zfbook/zfbk.html>; Title page, Publication page, Table of Contents only, 7 pgs.

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		Wianny et al., "Specific interference with gene function by double-stranded RNA in early mouse development," <i>Nature Cell Biol.</i> , 2:70-75 (available in print February 2000; published electronically December 23, 1999).
		Wilkinson, "Whole mount <i>in situ</i> hybridization of vertebrate embryos," <i>In situ hybridization, a practical approach</i> , Rickwood et al., eds., IRL Press, Oxford, 1992, Title page, publication page, table of contents, and pgs. 75-83.
		Willett et al., "Expression of zebrafish <i>rag</i> genes during early development identifies the thymus," <i>Dev Biol.</i> , 1997 Feb 15; 182(2):331-41.
		Xie et al., "A ribozyme-mediated, gene "knockdown" strategy for the identification of gene function in zebrafish," <i>Proc. Natl. Acad. Sci. USA</i> , 1997; 94(25):13777-13781.
		Yang et al., "Specific double-stranded RNA interference in undifferentiated mouse embryonic stem cells," <i>Mol Cell Biol.</i> , 2001 Nov; 21(22):7807-16.
		Yeung et al., "Inhibitory role of the host apoptogenic gene PKR in the establishment of persistent infection by encephalomyocarditis virus in U937 cells," <i>Proc Natl Acad Sci U S A</i> , 1999 Oct 12; 96(21):11860-5.
		Zamore, "RNA interference: listening to the sound of silence.," <i>Nat Struct Biol.</i> , 2001 Sep; 8(9):746-50.
		Zhao et al., "Double-Stranded RNA Injection Produces Nonspecific Defects in Zebrafish," <i>Developmental Biology</i> , 2001; 229:215-223.

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